

Adapted from

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Cranial Cruciate Ligament

Rupture in the Dog



Profile

Cranial cruciate ligament rupture (CCLR) is the **most common cause** of hind-limb lameness in dogs. It causes severe knee pain and instability. The cranial cruciate ligament in dogs is exactly the same as the anterior cruciate ligament (ACL) in people. Dogs rupture this ligament just as people do with one very important difference. People who suffer a ruptured cruciate ligament do so often as a result of sports trauma or accident. Dogs that rupture cruciate ligaments do so **secondary** to how their knee is built and formed. Certainly trauma plays a role in acute ruptures, but the overall disease process especially in dogs over 50# is primarily an anatomic problem. There is a cycle of injury over time of the ligament becoming stretched and scarred, stretched and scarred, until the weakened scar finally breaks once and for all. Arthritis of the joint occurs secondary to instability from ligament rupture and advances rapidly if the knee is not stabilized. CCLR is a surgical disease.

Systems. The cranial cruciate ligament prevents the tibia (shin bone) from moving forward and rotating inward during weight-bearing in comparison to the femur (thigh bone).

Genetic implications. CCLR may be a recessive heritable disease. We do see certain lines of dogs where multiple relatives are affected.

Breed Predisposition. Labrador and golden retrievers, rottweilers, Bernese mountain dogs, bull terriers,

bullmastiffs, akitas, and chow chows are at increased risk.

Age and Range. Cruciate rupture usually occurs in skeletally mature dogs; incidence increases in middle-aged and older dogs, peaking between 5 and 7 years of age. Skeletally immature dogs rarely have CCLR and only with external trauma.

Risk Factors

Active sporting or working dogs are most often affected. Obese dogs and dogs with underlying systemic disease are more prone to rupture.

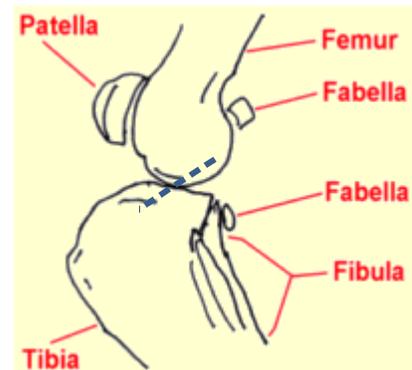
Because this problem relates to actual anatomy and biomechanics of the joint a dog that ruptures the ligament in one knee is at increased risk (simply from symmetry of their body) to rupturing the ligament in the opposite knee over time.

Signs

History. Dogs with CCLR often have a history of acute lameness for several days that improves but then recurs 4 to 6 weeks later and worsens. Some dogs have long-term mild lameness that has never been recognized or worked-up for years. In as many as 30% of dogs, ligaments in both knees are ruptured at the time of initial diagnosis.

Physical Examination. The knee will be swollen and painful upon palpation and during range of motion tests by the doctor. Joint crepitation (grinding) may be palpated; palpation of a medial thickening (scarring) or “bump” over the top and inside

aspects of the tibia is common. Laxity of the knee can be detected during palpation by the doctor.



Pain Index

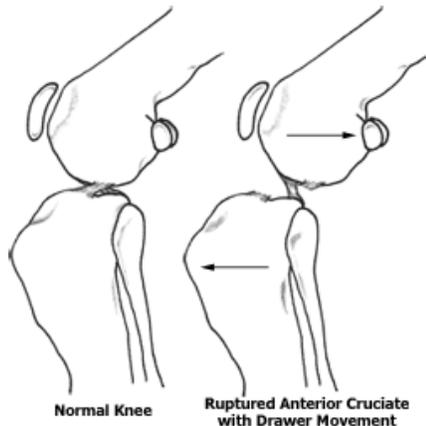
Dogs exhibit moderate discomfort during normal activity by decreased weight-bearing on the affected limb and by sitting with the affected limb held to the side. Dogs exhibit moderate to severe signs of pain on palpation.

DIAGNOSIS

The doctor will palpate the affected knee to assess its stability. Diagnosis of CCLR is made by elicitation of positive cranial drawer (the shin bone moves forward in comparison to the thigh bone) or cranial tibial thrust during the exam with the doctor. Medial “bump” (scarring) occurs rapidly after ligament rupture, and is ample indication for surgical joint exploration even in the absence of laxity.

Radiographic signs of knee arthritis are supportive of CCLR diagnosis. The radiographs of the knee allow the

doctor to measure the angles of the joint surfaces to make a surgical plan but we can't actually see the CCL with radiographs alone.



Differential Diagnosis

Any radiographic signs of knee arthritis in dogs can suggest a diagnosis of cruciate ligament rupture. Many dogs with hindlimb lameness due to CCLR have concurrent hip lameness due to hip dysplasia.

TREATMENT

Treatment for CCLR is surgical, for both large-and small-breed dogs.

Medical

Medical therapy should be considered **ancillary to surgery and not instead of surgery. Medical therapy without surgery results in progression of arthritis** and lameness in affected dogs.

- Nonsteroidal antiinflammatory drugs may be used to alleviate patient discomfort.
- Pain relievers like Gabapentin may be prescribed
- Other joint supplements or treatments, such as polysulfated glycosaminoglycans, glucosamine, chondroitin sulfate, ASU, MSM are excellent. The **only** product we

recommend using is Dasuquin brand- you can trust that what it says is in there is actually in there and usable by your dog

- Corticosteroids (prednisone) are not used chronically often

Surgical

81% to 100% of dogs remain lame unless surgical correction is performed. This is a surgical disease. Over the last many decades numerous techniques have been attempted to repair ruptured cruciate ligaments.

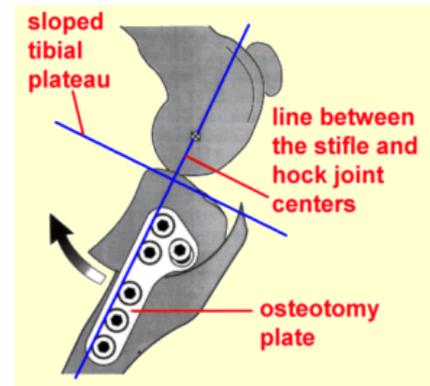
If your dog (or cat) is small and has essentially normal angles (as diagnosed with radiographs) we can do **Extracapsular lateral fabellar suture stabilization technique (LSS)**. This surgery involves using some very heavy suture implanted in the same orientation of the original ligament to simulate its function and maintain stability. Again, this surgery is only intended for small dogs and cats and is NOT appropriate for the majority of the CCLR ruptures we see.

If your dog is more than 45# and has steeper-than-normal angles in their knees we perform a Tibial Plateau Leveling Osteotomy (TPLO) surgery. This surgery does not replace the broken ligament. Instead it solves the actual biomechanical problem caused by having steep angles in the knee.

The surgery involves opening the joint, cleaning out the broken and diseased tissue and closing the joint capsule. Then on the outside of the joint under the muscles and on the bone a very specific curved cut (osteotomy) is made in the top of the tibia. This cut gives us the opportunity to rotate the piece of

bone to decrease the biomechanical angle inside the knee. After rotating the piece a bone plate is applied to allow the bone “fracture” that we just created to heal. Again, we don't actually replace the ligament at all, we change the biomechanics of the joint so that when the dog is weight-bearing the muscles of his legs are able to hold the knee steady.

The whole goal and purpose of the surgery is to have a knee joint free of pain and very stable so the dog can return to a normal active life.





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